

REMARKS/ARGUMENTS

Claims 1-33 are pending herein, with claims 3-5, 9, 15-23, 25, 26 and 28-33 withdrawn from consideration. Claims 1, 2, 6-8, 10-14, 24 and 27 are under examination, with claim 1 being independent. Claims 1-3 and 8 have been amended. Claim 7 has been canceled. No new matter has been added.

In the pending Office Action, the Examiner rejected claims 1, 2, 6, 7, 10, 11, 13, 14, 24 and 27 under 35 U.S.C. § 103(a) as obvious over WO 00/40886¹ (Baylot) in view of United States Patent No. 5,020,481 (Nelson); claim 8 under 35 U.S.C. § 103(a) as obvious over Baylot in view of Nelson and further in view of United States Patent No. 6,000,438 (Ohrn); and claim 12 under 35 U.S.C. § 103(a) as obvious over Baylot in view of Nelson and further in view of United States Patent No. 6,703,127 (Davis, *et al.*). Applicants have carefully considered the Examiner's rejections and the reasons offered in support thereof and respectfully disagree with the conclusions reached by the Examiner. For the reasons set forth more fully below, it is submitted that the invention as claimed is patentably distinct from the art applied by the Examiner.

The following description of the invention is taken from the specification and is provided for the convenience of the Examiner. It is not intended to argue limitations not present in the claims or to argue for an interpretation of any claim term that is different from, or more narrow than, the broadest reasonable interpretation of such term as may be accorded such term by one of ordinary skill in the art after a full and fair reading of the specification.

The invention is directed to a device for thermally insulating an undersea pipe. The insulating device includes a thermally insulating covering contained in a leakproof, flexible, case.

¹ Baylot as applied by the Examiner is a WIPO publication of a French PCT application, which corresponds to United States Patent No. 6,978,825. Reference to specific portions of Baylot herein shall be made with reference to the corresponding U.S. patent, for ease of reference.

The case confines a phase-change material (“PCM”) within a plurality of pre-fabricated walled containers disposed about the pipe. A main insulating material is disposed between the outer case and the phase change material, so that the containers holding the PCM are placed close to, but not in direct contact with, the pipe. This combination is nowhere shown in the art.

Baylot teaches a device for insulating undersea pipes by use of a PCM **4** contained in a matrix **2**. (*see*, Abstract) Matrix **2** is in direct contact with pipes **1₁-1₂** (*see*, Figs. 1 and 2), and is not a flexible container. Baylot does not disclose, or even hint at, the possibility that PCM **4** is not in direct contact with pipe **1**.

Nelson discloses an insulating arrangement in which an insulating material is confined in containers made of “thick walled tubular shaped” elements (col. 20, line 40) which are not likely to be flexible or otherwise deformable. This is an important distinction, because the PCM of the invention can be subject to changes in volume when changing phase. A rigid container, such as one with thick walls, will not accommodate the changes in volume which accompany use of a PCM (which Nelson does not).

Additionally, Nelson teaches the use of an insulating material which is in direct contact with the pipe (*see, e.g.*, pipe 297 in Fig. 39C and pipe 322 in Fig. 42C). This is consistent with the teachings of Baylot, discussed above. Likewise, Ohrn teaches insulating a pipe **12** with PCM **22** which is in direct contact with pipe **12** (*see*, .Fig. 2).

In sum, *each* reference applied by the Examiner teaches insulating a pipe with an insulating material which is *in direct contact* with the pipe, rather than contained in a container which is *not* in direct contact with the pipe, as required by the claims herein. The Examiner has offered no teaching, suggestion or motivation in the applied art which would lead one of ordinary skill in the

art to make the leap of having an insulating PCM isolated and removed from the pipe which is being insulated.

There is also a distinction with a significant difference in performance, as pointed out by the applicants in para. [0069] of the published specification:

[0069] The space between the PCM and the pipe makes it possible to reduce the rate at which heat is absorbed from oil leaving the wellhead during a stage of restarting production after a stoppage, thus enabling the oil to remain at temperature for as long as possible and reach the temperature T_0 only when it is close enough to the surface to be able to reach the surface without its temperature dropping below the temperature T_1 at which some of its components freeze, thus preventing flow within the pipe.

Thus, the references applied by the Examiner uniformly fail to teach or suggest this feature of the invention.

In the absence of any such teaching, suggestion or motivation in the applied art showing this feature of the invention, therefore the references applied by the Examiner fail to teach or suggest the invention as claimed, and so fail to render unpatentable the invention. Withdrawal of the rejection and early and favorable action is respectfully solicited.

It is believed that no further fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
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